



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

Mr. Mark A. Prescott  
Department of Homeland Security  
U.S. Coast Guard, Commandant (G-MSO-5)  
Deepwater Ports Standards Division  
2100 Second Street, SW  
Washington, DC 20593-0001

Docket No: USCG-2004-18474

Dear Mr. Prescott:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 has completed its review of the Draft Environmental Impact Statement (DEIS) for the Main Pass Energy Hub, a liquefied natural gas (LNG) deepwater port terminal and natural gas pipeline facility proposed by Freeport-McMoRan Energy, LLC. In addition, EPA is a cooperating agency for this project.

Freeport-McMoRan Energy, LLC proposes to construct a deepwater port and associated anchorages in the Gulf of Mexico, approximately 16 miles southeast of the coast of Louisiana in Main Pass (MP) lease block 299, and a gas pipeline junction platform located approximately 40 miles from the Mississippi coast in MP 164. The proposed port would be designed to unload LNG carriers of up to 160,000 cubic meters capacity and handle 7.0 million metric tons per year of LNG, the equivalent of 350 billion cubic feet (bcf) per year of gas. The annual LNG throughput volume equates to a nominal vaporization capacity of 1.0 bcf per day. The vaporization facility would be designed for a peak capacity of 1.6 bcf per day to provide additional supply during periods of peak demand. Storage facilities for LNG would include six tanks having a combined total capacity of 145,000 cubic meters. There would also be three salt caverns for temporary storage of 27.9 billion standard cubic feet of natural gas. The proposed port would also include six pipelines totaling approximately 192 miles for natural gas and natural gas liquids (NGL). Five natural gas takeaway pipelines would connect the proposed port with existing gas transmission lines. Four natural gas pipelines would terminate offshore, and one pipeline would terminate on shore near Coden, Alabama. The NGL pipeline would connect the proposed port to a fractionating facility near Venice, Louisiana, where the gas liquids would be separated for sale.

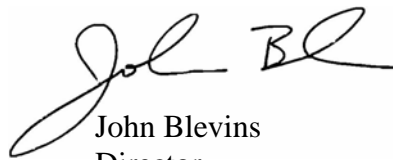
Multiple alternatives were examined in the DEIS: different geographic sites for the port, alternate pipeline onshore and offshore routes, fabrication locations, vaporization technologies, seawater intake/discharge designs, and marine life exclusion systems. After evaluation of an array of practicable alternatives, the applicant has identified the use of MP 299 as a preferred alternative for siting of the proposed terminal. All alternatives were compared to the no-action option.

EPA has assigned the proposed "open loop" open rack vaporization (ORV) re-gasification system a rating of "environmental objection" because of the anticipated direct and cumulative adverse environmental impacts to Gulf waters and habitat. ORV employs a "once through" system to warm the LNG to operating temperatures via heat transferred from ambient Gulf waters. A maximum of 200 million gallons per day of seawater would be required to re-gasify the LNG. Chemical biocides and sudden water temperature reductions can be lethal to fish, shellfish eggs, and larvae. The use of this open-loop technology is anticipated to introduce adverse aquatic impacts due to impingement and entrainment.

EPA believes that these impacts can be corrected by project modifications or other feasible technology and is requesting that additional information be gathered to evaluate and resolve the outstanding issues noted in the enclosed detailed comments, including alternatives to the use of ORV. EPA, therefore, classifies the DEIS as EO-2; i.e. (Environmental Objections-Insufficient Information).

Thank you for the opportunity to review and provide comments on the DEIS. If you have any questions, please contact Mike Jansky, of my staff, at (214) 665-7451 or e-mail him at [jansky.michael@epa.gov](mailto:jansky.michael@epa.gov) for assistance. When the Final Environmental Impact Statement is published, please send our office five copies.

Sincerely yours,

A handwritten signature in black ink, appearing to read "John Blevins", with a stylized flourish at the end.

John Blevins  
Director  
Compliance Assurance and  
Enforcement Division

Enclosure

**DETAILED COMMENTS  
FOR THE  
FREEPORT-MCMORAN LNG PROJECT  
UNITED STATES COAST GUARD  
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

**BACKGROUND**

Freeport-McMoRan Energy LLC proposes to construct a deepwater port and associated anchorages in the Gulf of Mexico, approximately 16 miles southeast of the coast of Louisiana in MP 299, and a gas pipeline junction platform located approximately 40 miles from the Mississippi coast in MP 164. The proposed port would be designed to unload liquefied natural gas (LNG) carriers of up to 160,000 cubic meters capacity and handle 7.0 million metric tons per year of LNG, the equivalent of 350 billion cubic feet (bcf) per year of gas. The annual LNG throughput volume equates to a nominal vaporization capacity of 1.0 bcf per day. The vaporization facility would be designed for a peak capacity of 1.6 bcf per day to provide additional supply during periods of peak demand.

Storage facilities for LNG would include six tanks having a combined total capacity of 145,000 cubic meters. There are three salt caverns to be used as temporary storage for 27.9 billion standard cubic feet of natural gas. The proposed port would also include six pipelines totaling approximately 192 miles for natural gas and natural gas liquids (NGL). Five natural gas takeaway pipelines would connect the proposed port with existing gas transmission lines. Four natural gas pipelines would terminate offshore, and one pipeline would terminate on shore near Coden, Alabama. The NGL pipeline would connect the proposed port to a fractionation facility near Venice, Louisiana, where the gas liquids would be separated for sale.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

The Draft Environmental Impact Statement (DEIS) lists the footprint of the different re-gasification technologies but does not state how those areas were calculated. Since technologies were discounted because of footprint size, this information needs to be included.

Pages 2-15 and 2-16 discuss dispersion of the plume from the open rack vaporization (ORV) system and the resulting temperature within the mixing zone. Temperature from a cold water plume is not thought to be as significant a problem for aquatic life as the potential toxic effects from the sodium hypochlorite added to the system. We recommend that the Final Environmental Impact Statement (FEIS) include an evaluation of chronic toxicity effects associated with the use of sodium hypochlorite on marine life on the edge of the mixing zone. Page 2-24 also says that the effluent plume was modeled using CORMIX and independently reviewed. The source of the independent review should be listed in the text. Dispersion modeling information has been highly important for two other deep water port facilities that have been permitted and specific information is needed for the reader to verify the results. Also, more specific information is needed in the FEIS to assess the practicability of employing the new technologies.

The DEIS recognizes that the ORV system would result in lethality to aquatic organisms from several causes. The physical intake structure is likely to cause impingement of non-mobile aquatic organisms that are larger than the 0.25 inch screen wire opening. Additionally, those organisms that are smaller than the screen wire opening, most notably fish eggs and larvae, are subject to entrainment and may suffer lethality from impingement on impellers, toxicity of the sodium hypochlorite, and/or the temperature drop associated with the warming of the LNG.

Section 301 (b)(2)(C) of the Clean Water Act requires the EPA establish permit limitations which are based on the Best Available Technology Economically Achievable (BAT). EPA will need additional economic information in order to establish BAT for re-gasification and will request that information from the applicant through a separate letter.

The DEIS states that ORV is used at facilities in Japan and Britain, but does not include any information about those facilities. Since the seawater is much cooler off Japan and Britain than in the Gulf of Mexico, it seems unlikely that ORV is used in those locations without some sort of modification. The possible need to augment an ORV system by vaporization technology such as Submerged Combustion Vaporizer (SCV) due to the cooler ambient water temperatures in the Gulf of Mexico during the winter months should be addressed. More specific information about foreign facilities is needed to understand how they would be relevant to this project.

Page 2-15 states that rupture would be problematic with the SCV technology. It would, however, appear that ruptures would be problematic with all of the available technologies. EPA knows of no significant or chronic problems with rupture that have occurred in the SCV systems currently being used in the United States.

Page 4-13 discusses effluent plume dynamics and states that the plume will typically be impinged on the sea floor. The outfall should be positioned in the water column to prevent attachment on the bottom.

Page 4-54 discusses the sodium hypochlorite concentration in the ORV discharge relative to toxicity data for a number of species. The conclusion is made that chronic toxicity data would not apply because aquatic life would not be exposed to the effluent plume for an extended period of time. It should be noted that NPDES regulations require analysis of acute criteria at the edge of a zone of initial dilution (ZID) rather than at the edge of a mixing zone as examined in the Environmental Impact Statement. A ZID consists of a significantly smaller area than a mixing zone. For this case, a zone of initial dilution with a radius of ten meters would be consistent with water quality analysis done nationally for most discharges. The NPDES permit review will also require consideration of chronic toxicity limits based on the effluent dilution at the edge of the mixing zone.

Section 4.0 of the permit application discusses potential ecological impacts. The applicant contends that ecological impacts from physical and chemical constituents of the discharge plume “are expected to be minimal” or that no impact is expected due largely to the high expected rates of plume dilution. For example, though the temperature differential at the end of the pipe is expected to be about 12°C (22°F), it is predicted that the average temperature of the plume should be within 1°C of the ambient water within about 30 meters of the discharge point and that the coldest part of the plume should be within 1°C in about 200 m.

Based on the information, it appears that ambient water must be entrained by the discharge plume at a rate of approximately 12 times the discharged volume, or 6.25 million cubic meters per day. Thus, under conditions where fish eggs and larvae are present in the water column around the discharge point, up to 71 million eggs and larvae could be entrained into the discharge plume each day. The effluent is not likely to exhibit lethal effects on all of the larvae and eggs entrained. However, if only 10% of those are killed, approximately 7 million entrained eggs and larvae would be impacted. It should be noted that an additional 6.3 million eggs and larvae would also be expected to be impinged and entrained in the water intakes. The document should be revised to reflect these impacts.

In addition, calculations need to be included regarding the impacts to invertebrates (shellfish and other zooplankton) in the water column. Water intake and effluent entrainment are likely to impact invertebrate populations, which are a critical part of the food web. Any impact to those populations is thus likely to affect both commercial and recreation fisheries.

## **WETLAND IMPACTS, OCEAN DISPOSAL, CLEAN WATER ACT**

The DEIS states that some long-term minor adverse cumulative impacts on biological resources, including fisheries resources and Essential Fish Habitat, would be associated with operation of the proposed Port. We believe that the impacts to fisheries resources and habitat should not be considered “minor.” Page 6-35 describes the irreversible and irretrievable loss of Essential Fish Habitat that would result from use of the ORV technology. Use of SCV has been proven to be a reliable technology for these types of facilities and, as noted on page ES-11 of the DEIS, would eliminate impacts to fisheries associated with re-gasification. The use of SCV should be given greater consideration to mitigate the impacts of this project.

According to page 2-80, lines 35-36 and pages 4-121 and 4-122, no preferred pipeline route has been selected to the gas plant in Venice, Louisiana, and no wetlands mitigation plans have been proposed in the DEIS. All practicable alternatives should be evaluated to avoid and minimize potential wetland impacts associated with the Baptiste Collette Bayou and the Pass a Loutre pipeline routes, and all unavoidable wetland impacts should be fully mitigated. The mitigation plan should be documented in the FEIS, which should demonstrate how the selected alternative constitutes the least damaging option in terms of wetland impacts. Efforts to avoid and minimize impacts to the Coastal Wetlands Planning Protection Restoration Act project (Delta Wide Crevasses Project MR-09) along each of the alternative routes should also be clarified.

Page 2-50, Table 2.1-10, and page 6-8 identify the Kiewit Offshore Services facility in Ingleside, Texas, as one of three alternative fabrication sites analyzed and should reflect that the facility is identified in other Coast Guard/MARAD LNG NEPA documents as the preferred fabrication site for ConocoPhillips Beacon Port and Compass Port LNG projects. The FEIS for this project should clarify how the same facility could reasonably be available as an alternative for the platform modifications associated with the Main Pass Energy Hub.

The plans for this project have changed over time with respect to whether sub-seabed disposal is to be incorporated into the design. Although such activities are not currently proposed, in order to avoid any confusion, we recommend that the Coast Guard /MARAD include a condition in the Deepwater Port Act license prohibiting receipt at or shipment from the port of any material for purposes of ocean disposal.

## **AIR ISSUES**

There have been recent changes in the air quality modeling for project emissions and mitigation of emissions that resulted in changes to air quality impacts that should be brought into the FEIS. The FEIS should contain the final proposed project emission characterization and a complete description of the procedures, input data, and assumptions to allow proper evaluation of the results provided.

Appendix F only reports on a specific Class I area scenario modeling. An appendix containing detailed documentation on all air quality impact to include NAAQS, Significant Impact Levels (SIL), Class I, and Class II modeling for the primary and alternate scenarios is needed for both the CALPUFF and Offshore and Coastal Dispersion modeling and could be provided in the appendices. These corrections should be made to ensure the final project and the air quality impacts are consistent throughout the document. Specifically, the air quality documentation should be revised to address impacts from both emissions and from construction emissions for the following issues: Cause or contribute to a NAAQS violation; Above or Below SILs, (Class I and Class II); Cause or contribute to an increment violation (Class I and Class II); Cause an adverse impact on air quality related values (AQRV) in a Class I area (visibility acid, deposition, etc.); and Substantially increase pollutant concentrations at sensitive receptors.

Section 3, page 3-90, of the document indicates that Prevention of Significant Deterioration (PSD) does not apply, but the operational emissions (without mobile emissions) totals in Tables 4.2-20 through 4.2-23 seem to indicate otherwise for at least one alternative. Also, it is not clear from the discussion on pages 3-89 and 3-90 whether the project is a modification to an existing facility or a new emission source. However, based on the information submitted in the air permit application, Region 6 has been treating this as a new source.

The comparison of either operational or construction emissions to Mineral Management Service thresholds to determine the need for air quality impact modeling is not appropriate. Air quality impact modeling should be provided to evaluate compliance with the evaluation criteria.

The existing air quality measurements should be provided for all pollutants and averaging periods of concern. Tables in the report do not include values for all pollutants and averaging periods of concern. The DEIS indicates that 8-hour ozone and particulate matter smaller than 2.5 micrometers in diameter (PM<sub>2.5</sub>) values exceed the NAAQS. Because of these ambient conditions, the effect of the proposed project on ambient ozone and PM<sub>2.5</sub> conditions should be addressed and included. Furthermore, baseline levels for the 24-hour and annual PM<sub>10</sub>, 1-hour and 8-hour Carbon Monoxide, and 3-hour Sulfur Dioxide (SO<sub>2</sub>) were not included in tables.

The Class I area impact modeling results of construction emissions exceeded the Class I SIL but no cumulative impact analysis at Breton was performed. The fact that 76% of the Class I increment is available and the semi-temporary nature of the construction activity (four years) are offered as reasons, no cumulative impact assessment is needed, even though minor short-term impacts would occur. This needs further explanation. Until a cumulative assessment of PSD increment is performed, compliance with PSD increment cannot be determined. Furthermore, a better explanation is needed as to how long-term adverse impacts can be considered minor. No PSD Class II area modeling was performed because it was assumed that the Class I area modeling would be a conservative representation of the impacts expected in the Class II area. Since the distance to the nearest Class II area (land and water receptors) is expected to be much smaller than to the Breton Class I area, it is not clear how this assumption is valid without modeling. Class II area modeling should be done to address this uncertainty.

The FEIS should more fully document the cumulative impacts from the project. A partial evaluation was included, but a full evaluation should be included. This should include all onshore and offshore emission sources within and proximal to the Class I and Class II areas, not only natural gas pipeline and similar projects. The qualitative comparison of the project emissions to total OCS emissions is not an appropriate substitution for the cumulative impact assessment. Likewise, comparison to the MMS threshold emission values as reason for not doing a cumulative assessment is not appropriate. The only appropriate reason for not performing quantitative cumulative impact assessments is to have the project's Class I and Class II concentrations less than the applicable SIL. Under this situation, the project cannot significantly contribute to NAAQS or PSD increment violations. Cumulative impacts to AQRVs in the Class I area and impacts to sensitive receptors needs to be conducted and included in the proposed project.

Section 4.2.9.3 (Dispersion Modeling Results) The FEIS should include a detailed discussion of modeling procedures for how the dispersion modeling was developed, assumptions made and limitations on data sources. This discussion should also include ambient air, location and spacing of receptors, how short term emission estimates were done, why OCD modeling was not sufficient for the analysis, and an explanation of CALPUFF modeling. The text says that Class II concentrations are reflected in Table 4.2-22, but only Class I is included in the table. The table needs to be supplemented or an additional table created to contain the Class II data.

ES-9 (Air Quality). This one sentence does not reflect the operational and management mitigation that Freeport-McMoRan Energy has proffered to reduce air impacts. The reduced use of tugboats, the control on the type of fuels for the supply and crew boats, as well as the use of natural gas and other steps were proposed as mechanisms to address the Class I visibility issues and modeling concerns. A letter received from Freeport-McMoRan alluded to some withdrawal from certain operational changes. To do so, would call into question whether the “final modeling runs” are in fact reflective of final operational decisions.

## **GENERAL COMMENTS**

Section 2.2.1.1 (Detailed Project Description): This section does not address whether an onshore docking facility for the tugboats, crew and supply boats, helicopters, etc. will be constructed or if an existing facility will be used. The section does not disclose if these will be dedicated service units or “rented for hire” per trip.

Section 3.2.4.2 (Local Geology - Offshore Pipelines): Not all of the alternatives to the Alabama Bayou La Batre route were examined even though a portion of each would be offshore. The Pass A Loutre NGL route alternative was not examined.

Section 3.2.9.2.1 (NSPS Applicability): NSPS Kb applies to tanks greater than 40 m<sup>3</sup>. The 40 to 75 m<sup>3</sup> range has record keeping requirements. The DEIS says that no tanks greater than 75 m<sup>3</sup> are contemplated, but is silent on the 40 to 75 m<sup>3</sup> range.

Section 3.4.6.1 (Recreational Resources) [Also, Section 4.4.6.1]: The discussion is limited to Federal areas. All recreation areas that might be potentially impacted should be discussed. A discussion of the Pass A Loutre state wildlife management area needs to be added.

Section 3.4.8 (Transportation): A discussion of the ports for the tugboats and crew/supply boats servicing the Main Pass terminal and other offshore operations based in Venice needs to be added.

Section 4.2.4.1.3 (Salt Cavern Construction): Discuss further the geological features of the salt domes to include the potential impacts from the construction of the natural gas storage units.

Section 4.2.8.2 (Transportation): A discussion of increased marine traffic associated with the crew and supply service boats needs to be added.

Section 4.4.2.2 (Wetland Habitat and Wildlife): This section in the FEIS should reference Table 4.4-1 and clarify whether the wetland acreage has been verified by the Corps of Engineers. Also, the FEIS should clearly indicate whether and how the selected alternative represents the least damaging practicable alternative in terms of wetland impacts. A preliminary wetlands mitigation plan should be included in the FEIS. Please clarify the status and current applicability of the 2004 Department of the Army Permit Application Number MVD-2004-1758-EDD.